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Chen

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(54) **KEY ASSEMBLY**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,746,307	A *	5/1998	Joss et al.	200/303
6,100,484	A *	8/2000	Houze et al.	200/512
6,148,183	A *	11/2000	Higdon et al.	455/575.1
6,791,533	B2	9/2004	Su	
2004/0240162	A1	12/2004	Hsu	
2005/0272491	A1	12/2005	Jeon	

2006/0243267 A1 11/2006 Nakajima
2007/0034493 A1 2/2007 Kawasaki
2007/0046646 A1 3/2007 Kwon

OTHER PUBLICATIONS

First impressions of the T-Mobile Blackberry Curve 8900 with high res, GPS, and updated keyboard; <http://blogs.zdnet.com/cell-phones/?p=496>; retrieved on Dec. 11, 2009.

HTC Touch Pro Review: black diamond with a keyboard; <http://www.product-reviews.net/2008/06/05/htc-touch-pro-review-black-diamond-with-a-keyboard/>; retrieved on Dec. 11, 2009.

HTC Touch Pro pictures; http://www.gsmarena.com/htc_touch_pro-pictures-2413.php; retrieved on Dec. 11, 2009.

Extended European Search report dated Jul. 26, 2010. In corresponding application No. 09178952.9.

* cited by examiner

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(57) **ABSTRACT**

A mobile device is described herein in which the mobile device has a housing that includes a transition point and an actuator that can be flexible and that can be used to initiate a predetermined action. The actuator can include a transition point. The mobile device can also have a stiffening component that can be configured to engage the actuator and can also have a flexible circuit. In one arrangement, the flexible circuit can be coupled to the stiffening component and the flexible circuit can be configured to relay signals in response to a force being applied to the actuator. In another arrangement, the actuator can be positioned such that the transition point of the actuator substantially aligns with the transition point of the housing of the mobile device.

14 Claims, 19 Drawing Sheets

